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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,449	05/24/2000	Scott C. Harris	SCH/BIOMETRICS	4716

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EXAMINER

SHIN, KYUNG H

ART UNIT	PAPER NUMBER
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2132

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/577,449

Applicant(s)

HARRIS, SCOTT C.

Examiner

Kyung H Shin

Art Unit

2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is responding to the amendment received on 3/4/2004.
2. **Claims 7, 11, 13, 21, 24, 25** are amended. **Claims 1-25** are presented for examination. **Claims 1, 7, 11, 14, 17, and 22** are independent claims.

Response to Arguments

3. Applicant's arguments, with respect to the rejection(s) of claim(s) 1- 25 under **35 USC 102(e)** have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made over **Bjorn** in view of **Takhar**.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-25** are rejected under 35 U.S.C. 103(e) as being unpatentable over **Bjorn** (U.S. Patent No. 6,035,398) in view of **Takhar** (U.S. Patent No. 6,002,787).

Regarding claim 1, Bjorn discloses a method comprising:

- a) obtaining information about a biometric part of a user's body; (col. 4, lines 4-7)
- b) Bjorn discloses the transformation of biometric data into a cryptographic key using relative dimensions between regions of a biometric image of fingerprint, (see col. 3, lines 32-34, and col. 4, lines 17-19, and col. 7, lines 32-34: "...relation to global features; code words generated by vector quantization to encode subunit spatial characteristics; etc."). Not explicitly taught by Bjorn is forming a key based on biometric information without determining absolute dimensions.

The Applicant's Abstract defines: *"The biometric part image is obtained and items within the biometric part are analyzed; Relationship between those parts are determined, e.g. Ratios between different parameter of different parts; those ratios are then used to form the key."* However, Takhar discloses *Ratios of different parts* (col. 26, lines 7-24: ".....the scan produces the most even spacing of ridge to valley ratios. produces the best results for level adjust, however, if ratios close to 1:1") are analyzed during the fingerprint scan and analysis process.

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bjorn without determining absolute dimensions e.g. Ratios as taught in Takhar. One would have been motivated to utilize relationship e.g. Ratios between those parts in order to

analyze fingerprint information, so that the obtained information be translated into the cryptographic key to allow access with accurate verification.

Regarding claims 2, 18, 23, A method as in claim 1 wherein said forming comprises determining ratios between different portions of said biometric information.

-This limitation encompasses the same scope of the invention as that of the claim 1, therefore this limitation is rejected for the same reason as the claim 1 above.

Regarding claims 3, 10, 6t Bjorn discloses method as in claims 1, 8, 11 further comprising entering a plurality of different biometric features extraction, an order of forming the code. (see col. 4, lines 21-24: “ ... includes at least some of the features extracted ... includes all of the identifying features extracted....” and col. 3, lines 22-29; col. 4, lines 30-36) Not explicitly taught by Bjorn is in a sequence, an order of the sequence forming the code.. However, Takhar discloses entering a plurality of different biometric features in a sequence, an order of the sequence forming the code. (see col. 4, lines 21-24: “ ... fingerprints are obtained on an imaging device as shown at 165, which converts a fingerprint image into a sequence of digitalized numerical codes,..”) Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bjorn with a sequence of entry of fingerprints as taught in Takhar. One would have been motivated to generate a unique key from extracted feature parts in order to make a strong fraud prevention system.

Regarding claims 4 and 19, Bjorn discloses a method as in claims 1,17 further comprising entering information that is supplemental to the biometric information, the supplemental information indicating parts of the biometric information, which should be used to form the code. (col. 3, lines 25-35)

Regarding claims 5 and 20, Bjorn discloses a method as in claim 1 wherein said biometric part is a fingerprint. (col. 1, lines 39-41)

Regarding claim 6, Bjorn discloses a method as in claim 4 wherein the supplemental information includes an angle of a line used to obtain the information. (Fig. 9, col. 6, lines 30-49)

Regarding Claim 7 (Currently Amended), A method comprising:
entering biometric information; determining at least one relationship between different parts of the biometric information, where said relationship includes a ratio between different parts of an image; and using said at least one relationship to form a cryptographic key. -These limitations encompass the same scope of the invention as that of the claim¹, therefore these limitations are rejected for the same reason as the claim 1 above.

Regarding claim 8, Bjorn discloses a method as in claim 7 further comprising using said cryptographic key to encrypt or decrypt information. (col. 4, lines 30-36)

Regarding Claim 11 (Currently Amended), Bjorn discloses an apparatus, comprising:

- a) a biometric information obtaining part; (see col. 3, lines 6-7)
 - b) a computer; (Fig. 1, see col. 2, lines 37)
 - c) Bjorn discloses wherein computer is responsive to obtain an image from the biometric information part, extract values from the biometric information part, and use said values to encrypt or decrypt a message, and wherein said computer obtains a plurality of different biometric information parts, and wherein a sequence of biometric features used to form the code e.g. input to generate a cryptographic key. (see col. 4, lines 21-24: "... includes at least some of the features extracted ... includes all of the identifying features extracted...." and col. 3, lines 22-29; col. 4, lines 30-36)
- Not explicitly taught by Bjorn is wherein both the content of the information parts and a sequence of entry of the information parts, forms the code.
- However, Takhar discloses both the content and a sequence of entry of the information parts, forms the code (see col. 4, lines 21-24: "... *fingerprints are obtained on an imaging device as shown at 165, which converts a fingerprint image into a sequence of digitalized numerical codes,..*")
- Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Bjorn with both the content and

a sequence of entry of fingerprints as taught in Takhar. One would have been motivated to generate unique key from extracted feature parts in order to make a strong fraud prevention system.

Regarding Claim 13 (Currently amended), Bjorn as modified discloses an apparatus as in claim 11 wherein the information is formed by relationships between different parts of an image of the biometric information. (see col. 4, lines 13-20) -This limitation also encompasses the same scope of the invention as that of the claim¹, therefore this limitation is rejected for the same reason as the claim 1 above.

Regarding claim 14, Bjorn discloses a fingerprint sensor comprising:

an image sensor chip forming a plurality of pixels for sensing an image, said chip having an active surface which receives said image, said active surface adapted to receive a finger thereon to obtain a fingerprint there from and produce an output indicative of the fingerprint. (col. 3, lines 25-35)

Regarding claim 15, Bjorn discloses a sensor as in claim 14 further comprising:

a computer part, connected to said image sensor, (cols. 3, lines 4-11) receiving said output, and using said output to form a cryptographic key. (col. 6, line 16)

Regarding claim 16, Bjorn as modified discloses a method as in claim 15 wherein said cryptographic key formed from a relationship between different parts of the image.
(col. 6, lines 30-49)

Regarding claim 17, -The limitations a), b), encompass the same scope of the invention as that of the claim 1, therefore, these limitations are rejected for the same reason as the claim 1 above. The limitation c) encompasses the same scope of the invention as that of the claim 8, therefore, the limitation is rejected for the same reason as the claim 8 above.

Regarding claim 22, Bjorn discloses a method comprising:

- a) obtaining information about a biometric part of a user's body; (col. 4, lines 4-7)
- b) obtaining additional information; and forming a cryptographic key based on both said biometric information and said additional information. (col. 3, lines 25-35)

Regarding Claims 21, 25 (Currently amended), Bjorn discloses a method as in claim 19 wherein the supplemental information includes an angle. (see Fig. 9; col. 6, lines 30-49: "*Ridges in fingerprints are continuous, therefore, a ghost point along a ridge which points at a ninety degree angle from the direction of the ridge*") Not explicitly taught by Bjorn is the supplemental information includes an angle of a line

along which biometric information is sampled. However, Takhar discloses an angle of a line along which biometric information (see Fig. 37 a, col. 19, lines 17-19: " *Normalize the fingerprint scan by rotating the scan around the vector (a) origin until vector (a) is at a 90.degree. angle with the original base line y-axis origin. »)*

Regarding Claim 24 (Currently amended), Bjorn discloses a method as in claim 22 further comprising entering a plurality of different biometric features in a sequence, an order of the sequence forming a part of said cryptographic key. These limitations encompass the same scope of the invention as that of the claim 11. c), therefore these limitations are rejected for the same reason as the claim 11. c).

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyung H Shin whose telephone number is 703-305-0711. The examiner can normally be reached on 10 - 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 305 - 1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KHS

Kyung H Shin
Patent Examiner
Art Unit 2132

KHS
May 15, 2004


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